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AUTHOR Landerholm, Elizabeth
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ABSTRACT

This study surveyed 110 preschool and kindergarten teachers in the greater Chicago area to determine the range of attitudes, knowledge, and practices related to computer usage in their classrooms. The results indicated that over 90 percent of the teachers had positive or very positive personal and professional attitudes toward computers, and that 51 percent used computers in their classrooms. Of that 51 percent that had computers in the classrooms, 20 percent said that their children also used computers in a school lab, while 31 percent had access to only the computer in their classroom. Of the 49 percent who did not have a classroom computer, 20 percent had access to a computer lab for their students, while 29 percent had no access to computers for their students. A total of 36 percent of the teachers had a computer at home, and 67 percent had some training, knowledge, or experience with a computer. Seven percent had no training, knowledge, or experience with computers. (A copy of the survey questionnaire is included. Contains 27 references.) (MDM)

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Early Childhood Teachers ' Computer Attitudes, Knowledge, and Practices

Elizabeth Landerholm, Ed.D
Associate Professor

Department of Curriculum and Instruction
Northeastern Illinois University
5500 N. St. Louis Ave.
Chicago, Il. 60625

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RUNNING HEAD: Early Childhood Teachers' Computer Attitudes

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Abstract

Two hundred-fifty kindergarten and preschool teachers in public and private schools in a five county area of Illinois, including the city of Chicago, were surveyed to identify teachers' computer attitudes, knowledge and practices. The results showed that over ninety percent of the teachers had positive or very positive personal and professional attitudes towards using the computer. Fifty-one percent of the teachers were using the computer in their classroom. Of that fifty-one percent, twenty percent said that their children also used the computer in a lab in the school., while thirty one percent only had the computer in their classroom. An additional twenty percent did not have a computer in the classroom, but did have a computer lab available. Twenty-nine percent did not have a computer in the lab or in the classroom. Thirty six percent of the teachers had a computer at home with the most common brand being some type of Apple computer. Seven percent of the teachers had no training, knowledge or experience on the computer. Sixty-seven percent had some training, knowledge and experience with a computer and twenty six percent had training and knowledge and used the computer frequently. The majority of teachers had learned to use a computer through workshops, university classes or own their own. Very few teachers had received instruction at school from a school computer instructor.

Key Words: Computers, early childhood teachers, teacher practices, kindergarten teachers, computer assisted learning.

Early Childhood Teachers'

Computer Attitudes, Knowledge and Practices

Many preschools and kindergarten-primary classes have computers in the classroom now. In the early and late 70's, when computers were first being introduced into the early childhood classrooms, researchers asked questions about :

- the age at which children would be able to use the computer
- the characteristics of children who were frequent computer users
- the gender of frequent users
- the content areas for which the computer is most useful
- the effect of the computer on social interaction
- the type of software used most frequently
- the choice of the computer area compared to early learning centers .

BACKGROUND LITERATURE

Preschool and Kindergarten Children's Use of the Computer

A review of the literature suggests that researchers have found that children of three, four, and five years old can learn to enjoy using the computer(Clements, 1987; Holmann, 1990; Rosengren, 1985, Shade & Watson,1990), that preschool children generally prefer to work together with another child on the computer rather than alone,(Buckleitner & Hohmann, 1988; Clements, 1987; Rosengren, 1985), that children tutor and learn from each other, that they develop positive attitudes toward the computer, and that they show increased social interaction at the computer (Fishman, 1991; Kostner, 1989; Shade and Watson, 1990). Both preschool boys and girls use the computer. Many studies have found no gender difference in young children's use of the computer(Clements,1987; Landerholm, 1994; Perlmutter, et, al, 1985). Other studies found gender differences in how boys and girls used the computer or type of

software preferred (Caftori, 1994; Elliot, 1994; Rosengren, 1985).

In terms of content areas, studies have shown that children can achieve prereading, readiness and writing skills through using the computer(Buckleitner & Hohmann, 1988;Borgh and Dickson, 1986; Buckleitner, 1994; Butler and Cox, 1992; McArthur, 1988 ; Moore,1991; Murphey, 1984). Other studies have reported children's gains in mathematics and problem solving skills(Buckleitner & Hohmann, 1988; Clements, 1987; Dublin, et al, 1994; Faulkner and Anderson, 1991).

Software Selection for Computer Assisted Learning

As researchers have continued studying young children's use of the computer, research has shifted from looking at how, when, and how long children use the computer , to what type of software is most effective for educational purposes(Anselmo & Zinck, 1987; Buckleitner, 1992, 1993, 1994; Fishman, 1991; Haugland & Shade,1988. The High Scope program in Michigan (Buckleitner, 1993) has found that the success of computer based learning for young children depends on :

-the quality of the overall preschool or kindergarten curriculum
-the quality of the computer software
-the software's match with the curriculum

Teachers' Implementation of Computer Assisted Learning

While there is now quite a body of literature related to children's interest in the computer and ability to use the computer, there is less available on how teachers develop their own computer literacy and how they implement computer assisted learning in their classroom. In addition, while we know that many preschools and kindergartens have computers in their classrooms, we do not know a lot about how the computers are being used in the classrooms. How many teachers in the field are actively using the computer as a teaching tool in the classroom? One of the concerns of early childhood teachers is that often a computer is purchased and placed in their classrooms. They are told to use it with the children without any training, or with

training from a consultant who knows computers but does not know about young children or about good curriculum for young children . Papert (1993), corroborates this idea in his suggestion that while many schools have installed computers in their classrooms, there has not been enough training for teachers on how to use them in imaginative ways to stimulate interest among children. Dublin,Pressman, Barnett. & Woldman (1994) further discuss the need for training materials to help integrate computers into the early childhood classroom and into the early childhood curriculum. Edyburn and Lartz (1986) found in their survey of kindergarten and early childhood special education teachers in Illinois, that computers were used in over 50% of the kindergarten classes and in only 7% of the special education classes. However, curriculum guidelines were absent in 74% of the classes already using the computer. Forty percent of the teachers using the computer were unable to identify any of the software programs they were currently using, while others could only give partial information about the title. Hancock and Betts(1994) suggest that a key obstacle to the use of technology in schools is the limited support teachers have for integrating unfamiliar technologies into instruction so that teachers frequently avoid new technologies. This is true in higher education as well. Sheila Cory (1983) suggests that there are four stages of development that schools go though for full implementation of computers for instruction:

1. Stage 1--getting on the bandwagon.

At this stage focus is on buying computers (hardware), with little thought given to software or staff development. There is little differentiation between computer literacy (learning to use the computer) and computer assisted learning (using the computer as an instructional tool). At this stage teachers' attitudes toward the computer is characterized by ambivalence.

2. Stage 2- stage of confusion

At this stage focus is still on hardware, but some free or inexpensive software is acquired. Some teachers take one course or one shot workshops. There is some differentiation between computer literacy and computer assisted learning. At this stage, some teachers are excited about computers while others are nervous.

3. Stage 3-Stage of pulling it all together

At this stage hardware is no longer the primary focus. There is greater acquisition of a wide variety of professionally developed software. A person is designated to coordinate staff development. Computer literacy is totally differentiated from computer assisted learning. Teachers' attitudes are very mixed: some teachers see computers as a panacea for education, some teachers are very resistant. The majority of teachers are gaining interest and losing fear.

4. Stage 4-Stage of Full Implementation

At this stage, there is continued specific acquisition of hardware, and planned software purchase and software library building. Staff development is offered in-house by a person employed by the school system. Required courses are offered. Software is matched to the curriculum. Computer literacy is clearly defined and taught in all grades. The teachers' attitudes toward the computer is respect and appreciation of the computer as a tool in education.

RESEARCH OBJECTIVES

This study surveyed preschool and kindergarten teachers to find out the range of attitudes, knowledge and practices related to the computer in a 5 county area around and including the city of Chicago, Illinois.

METHOD

Sample

To assess the state of early childhood teachers' attitudes, knowledge and practices

with the computer, a survey was sent to a random sample of preschool and kindergarten teachers in 125 public and 125 private schools in a five county area in the Chicago Metropolitan area that were listed in the Directory of Illinois Schools.

Procedures

Two hundred-fifty surveys were sent out to 5 counties(fifty surveys per county). In each county twenty five surveys were sent to public schools and twenty-five surveys were sent to private schools. Half of the surveys were sent to kindergarten teachers and half to preschool teachers.

The questionnaire consisted of thirty four items in a variety of formats; multiple choice, open ended questions, and Likert-type items. It was organized into six parts; demographic information, such as location of the school, public or private school, number of years teaching experience, number of years of education , and highest degree; personal attitudes toward the use of computers; professional attitudes toward the use of computers (adapted from Edyburn & Lartz survey, 1986) hardware; software; and training.(See figure 10.)

The data was first analyzed by using the Cory(1983) framework. The first category was Hardware. If the teacher did not have a computer in her classroom and there was no computer lab, then that school was classified at level 0(no computers available). If there was either a classroom computer or a computer lab , not much software and little training, the school was classified as level 1. If there was some training, inexpensive software such as Mecc as well as a computer in classroom or lab, the school was classified as level 2. If the teacher had involvement with curriculum and software selection, the school offered computer courses, and there was a wide variety of software, the school was classified as level 3. And finally if there was a software library, and a computer instructor on the school staff, the school was classified as a level 4 school. In addition to using the Cory framework, the data

was also tabulated for for each question and percentages computed.(See figures 1-9).

RESULTS

Demographics

Fifty two(47%) public and fifty eight(53%) private schools returned the survey.(See figure 1). Of the one hundred and ten surveys returned, 48% were returned by kindergarten teachers , 39% were returned by preschool teachers , 6% were filled out by someone else at the school(such as computer teachers) and 7% did not designate their grade level(See figure 2). In terms of teaching experience, 21% had 0-4 years experience, 24% had 5-9 years experience, 19% had 10-14 years experience, 15% had 15-19 years experience , 17% had 20+ years experience, and 4% left that item blank(See figure 3) In terms of teachers educational qualifications, 66% of the teachers listed their highest degree as a B.A. degree, 24% an M.A. degree, 8% a PhD, and 2% left the item blank(See figure 4).

Teachers' personal attitudes toward the computer

Ninety-two percent of the teachers had positive or very positive personal attitudes towards using the computer with eight percent having a neutral attitude.

Teachers' professional attitudes toward the computer

Ninety-one percent of the teachers had positive or very positive attitudes towards using the computer in the classroom with young children, with nine percent having a neutral attitude.

Computer use in the classroom

Fifty-one percent of the teachers were using the computer in their classroom. Of that fifty-one percent, twenty percent said that their children also used the computer in a lab in the school., while thirty one percent only had the computer in their

classroom. An additional twenty percent did not have a computer in the classroom, but did have a computer lab available. Twenty-nine percent did not have a computer in the lab or in the classroom(See figure 9).

Teachers' Computer use at Home and School

Thirty six percent of the teachers had a computer at home. Of the teachers that had a computer at home, the most common type of computer was an Apple computer(See figure 6). The most common type of computer at school was also Apple(See figure 6A).

Teacher Estimates of Students Who Own Home Computers

Teachers' estimates regarding the number of children in their classes who had computers at home ranged from 0-99%(See figure 7).

Teachers' Computer Knowledge and Training

Seven percent of the teachers had no training, knowledge or experience on the computer. Sixty-seven percent had some training, knowledge and experience with a computer and twenty six percent had training and knowledge and used the computer frequently. The majority of teachers had learned to use a computer on their own, or taken workshops, inservice workshops or university classes. Very few teachers had received instruction at school from a school computer instructor.

Teachers' Level of Computer Implementation

Using the Cory(1983) levels of implementation theory, twenty-nine percent of the teachers did not have either a computer in their classroom or a classroom computer lab for their students. These schools were at stage 0. They were not yet on the bandwagon. Fifty-one percent of the teachers had either a computer in the classroom or a lab, had some basic software and some sporadic training. These schools were at stage 1. Fourteen percent of the teachers had a computer in their classroom, and a

lab, computer at home, a higher percentage of students with computers at home, some more software and training. They were at stage two. Six % of the teachers had a computer in classroom and lab, computer at home, higher percentage of children with computers, wide variety of software, computer guidelines for instruction, choice of software, more training. They were at stage 3. None of the teachers were at stage 4-full implementation, which included a paid employee in charge of computer staff development(See figure 8).

DISCUSSION

Of the teachers who returned the survey,92 % had positive or very positive personal attitudes toward the computer and 91% had positive or very positive professional attitudes toward the computer. Probably, the teachers with the most positive attitudes were the ones who returned the survey. Attitudes seemed to be ahead of practices. There was a group of positive teachers who had computers at home and who had taken some training, but whose schools were not yet on the bandwagon(stage 1) so they were not able to put their positive attitudes towards computers to work with their children on the computer at school. Twenty-nine percent of the schools were at stage 0 where they were not yet on the band wagon. The majority of schools were at stage one(51%) or two(14%) where there was some hardware, but very little organized planning for computer use and very little training available. Six percent of the teachers were at stage three where there was more training, a more organized approach to planning and a wide variety of software available. Thus, there were a great many teachers who were positive toward the computer, but did not have the support (training, computer, consultant) to help in getting started or in moving forward. Most of the teachers who were using the computer frequently had learned on their r own by trial and error or by attending classes and workshops on their own.

SUMMARY

It is interesting to note that there is a general sequence of stages that schools go through in implementing the computer into the classroom. Early childhood teachers are also going through this process. Many schools are still in the early stages where more attention is being paid to the hardware than to the software or the training of teachers. Further research needs to be done on ways that facilitate more attention to software and training.

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Figure 1

Private & Public Schools

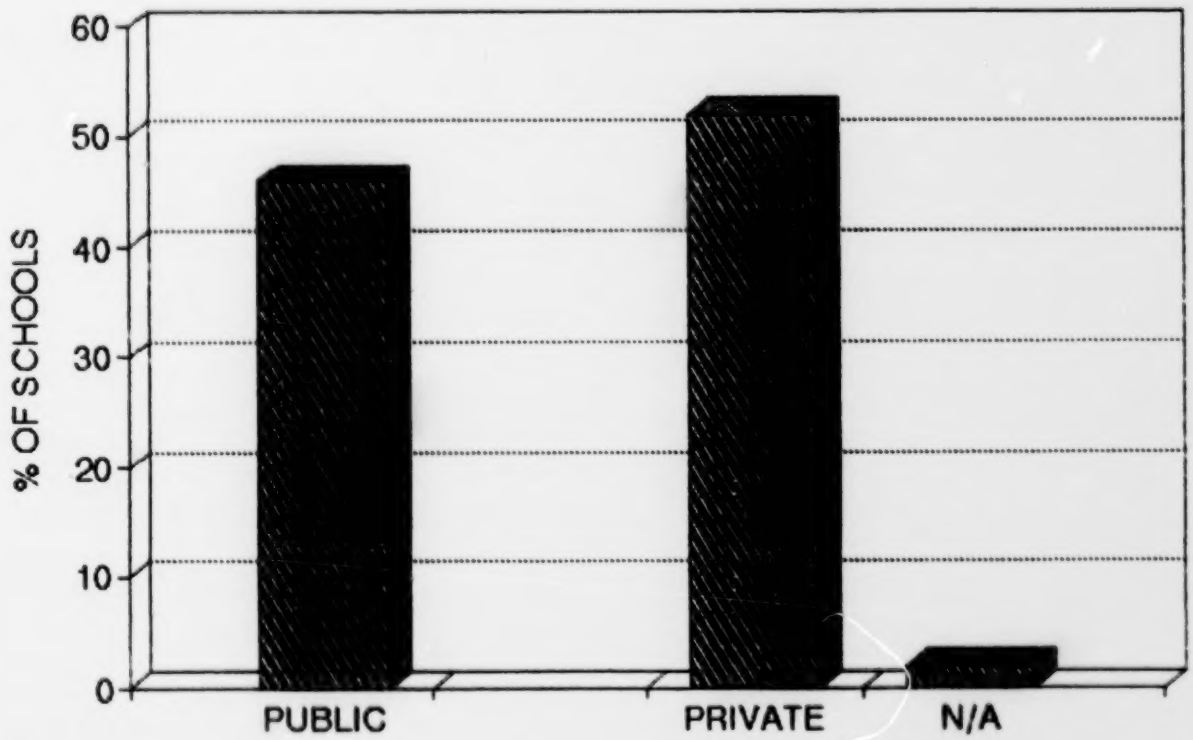

Figure 2

Kindergarten & Pre School Teachers

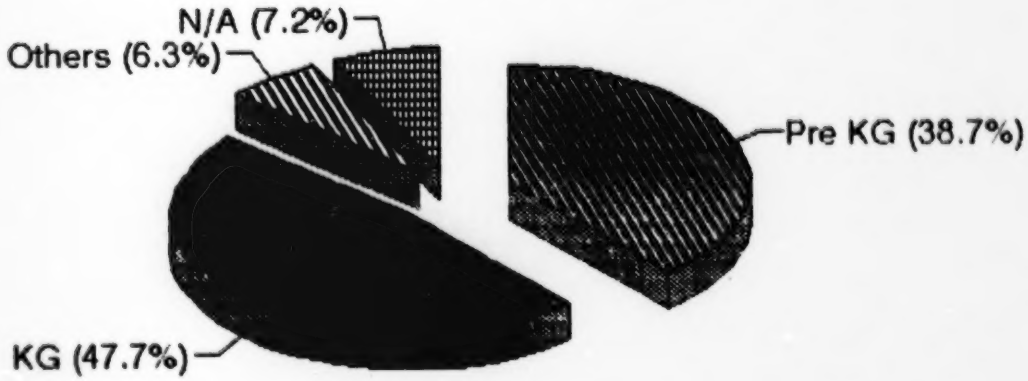

Figure 3

Teacher's Experience

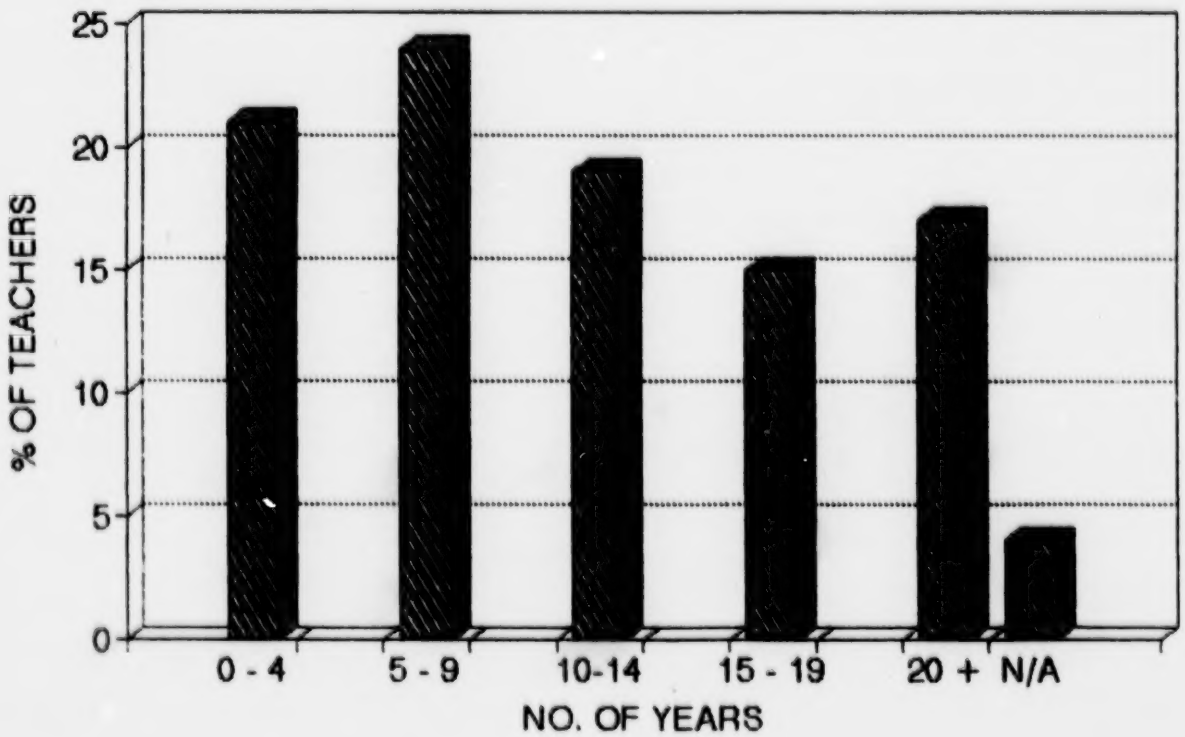

Figure 4

Teacher's Educational Level

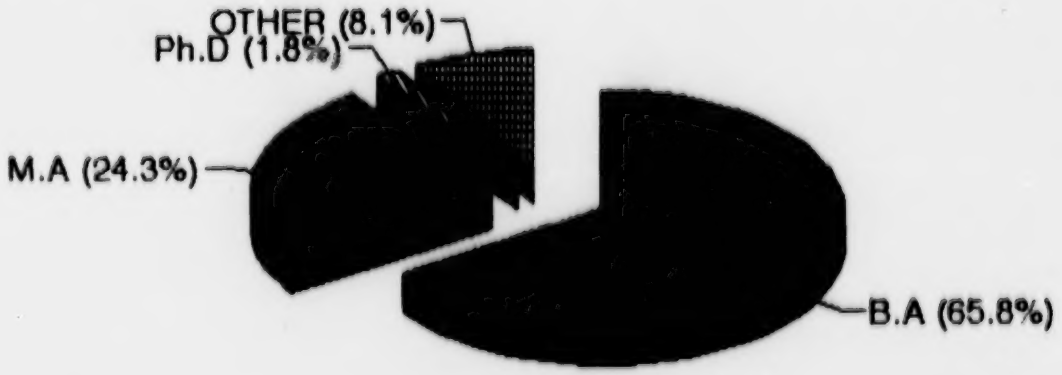

Figure 5

Computers in Classroom

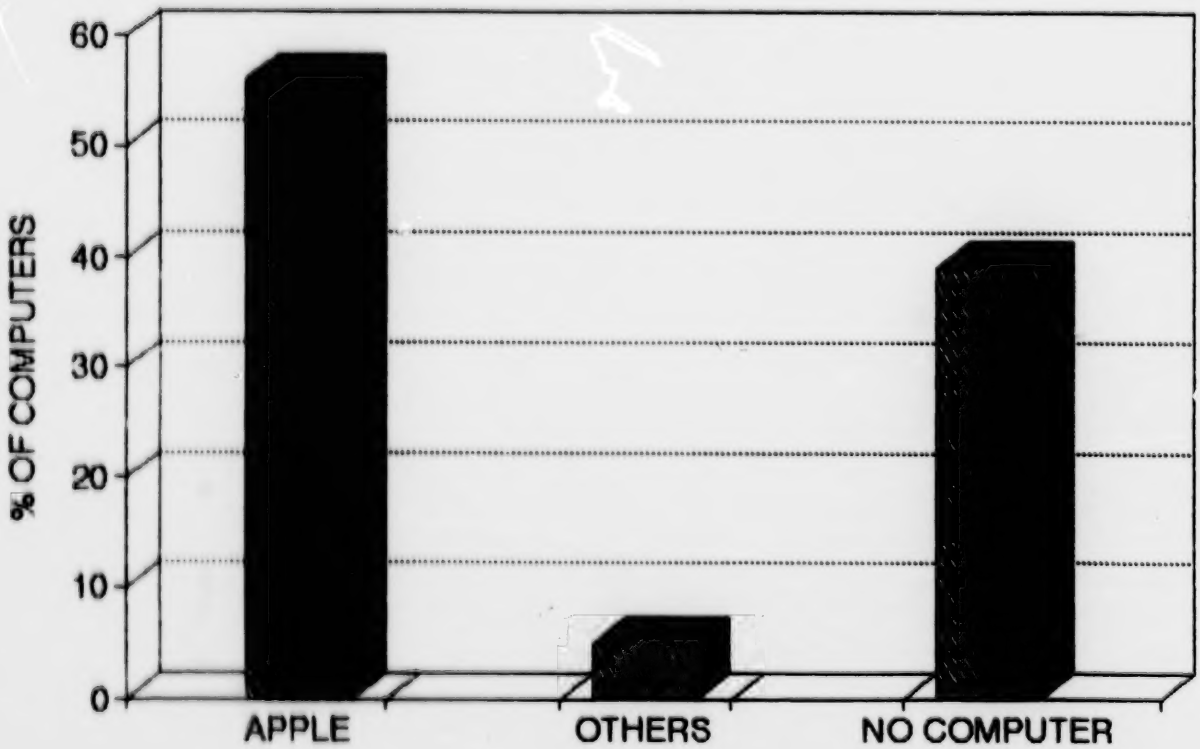

Figure 6

Teacher's Computer at Home

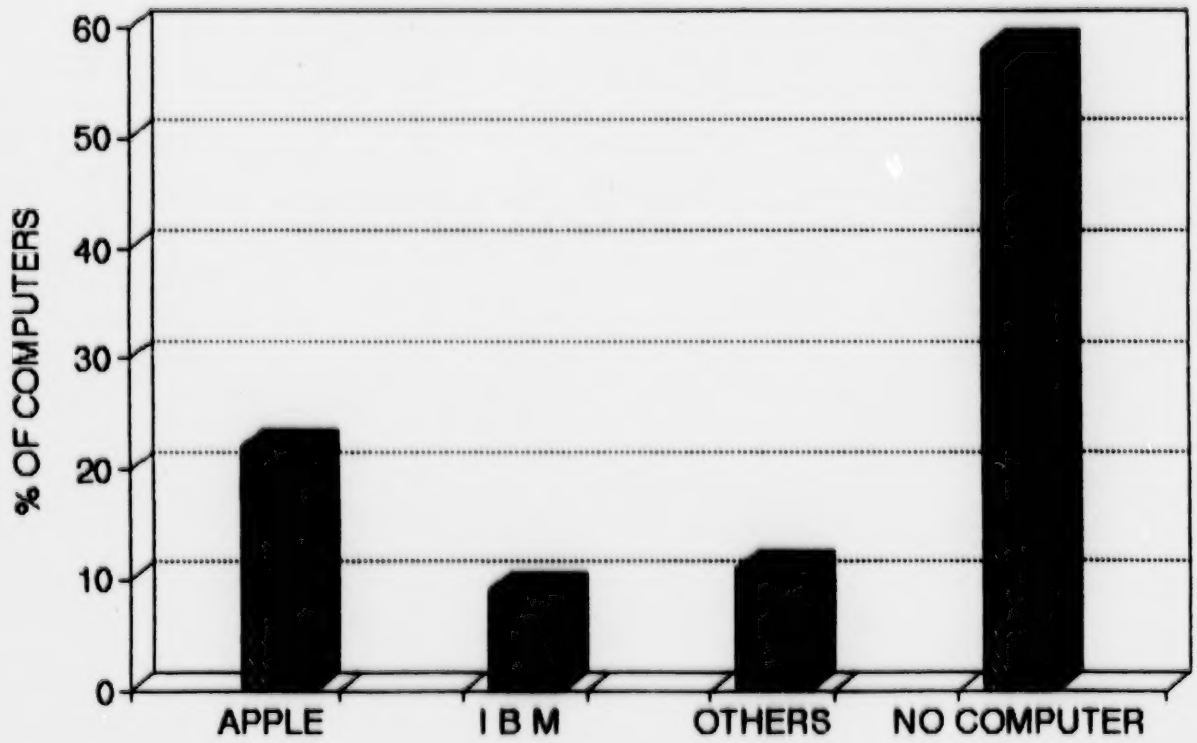

Figure 6 A

Computers- in Class & Home Comparison

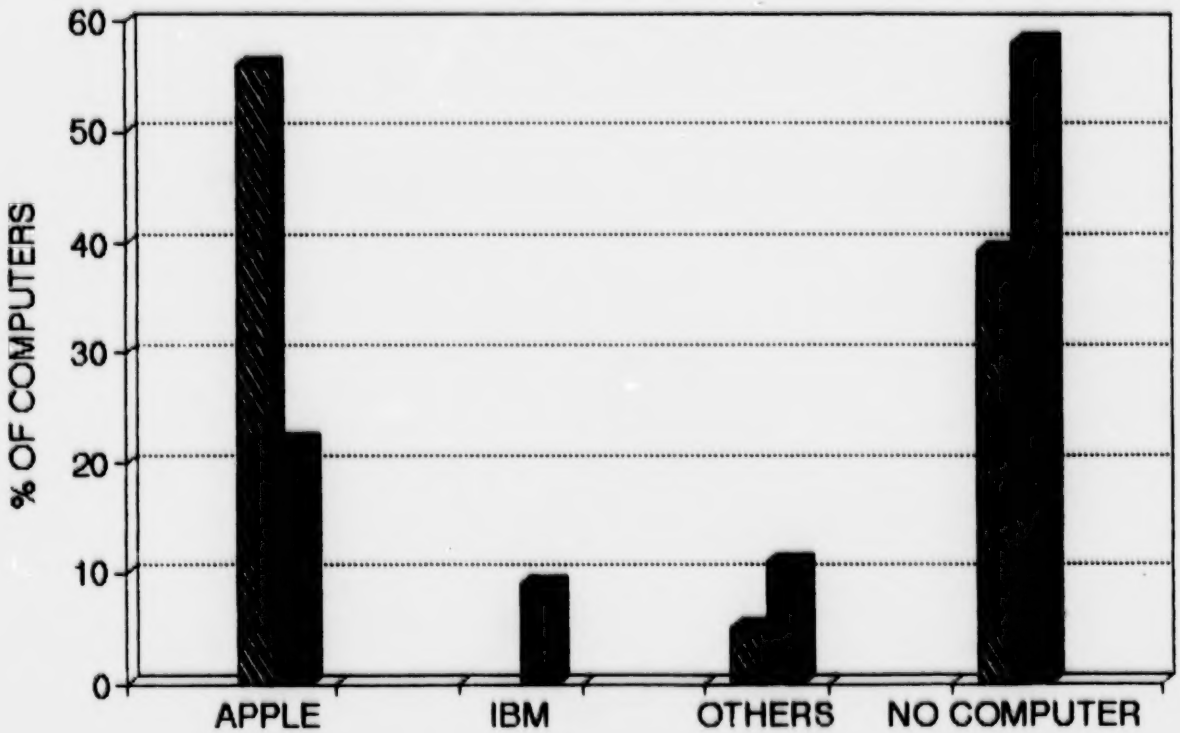

Figure 7

Teacher Estimates- % Students With P.C.

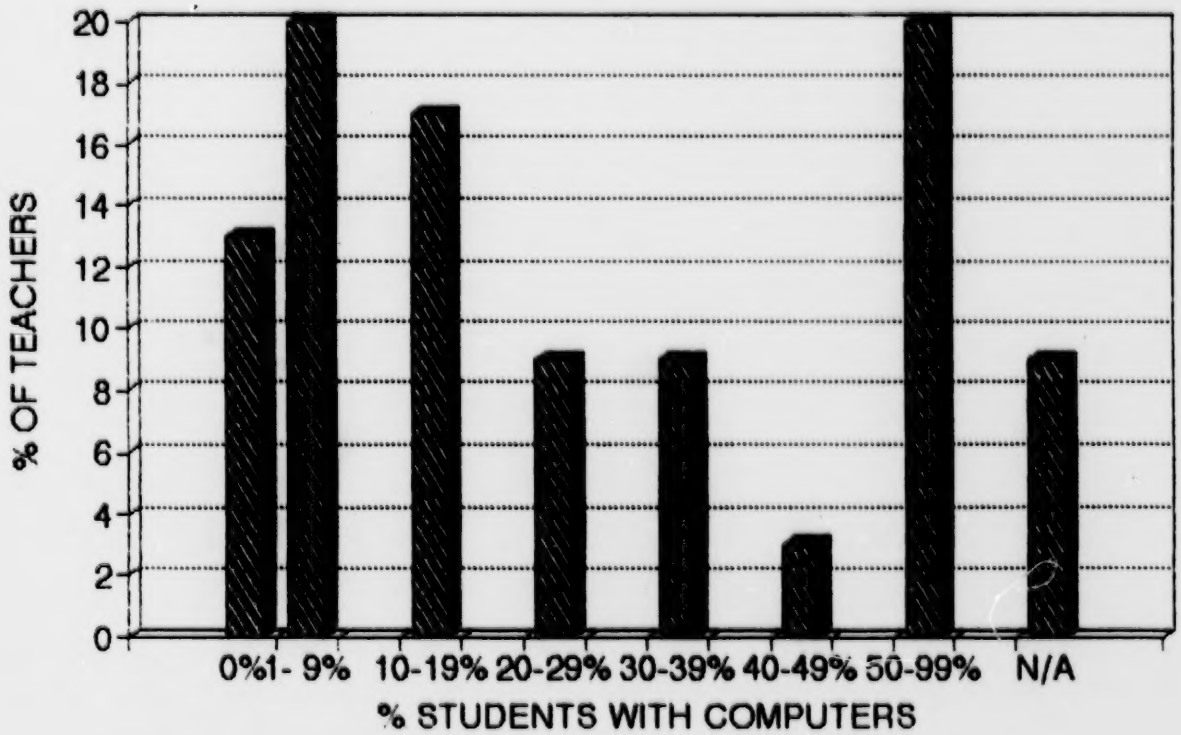

Figure 8

Stages of Computer Implementation

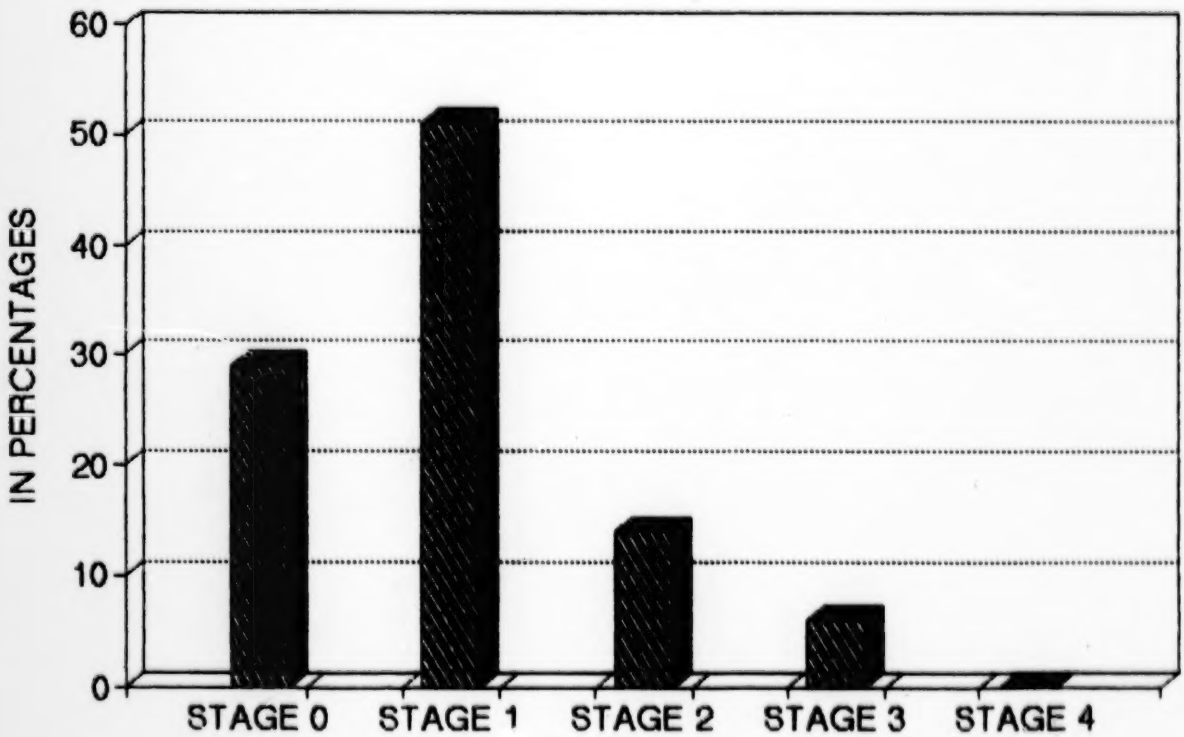

Figure 9

Computers- Use in Classroom &/or Lab.

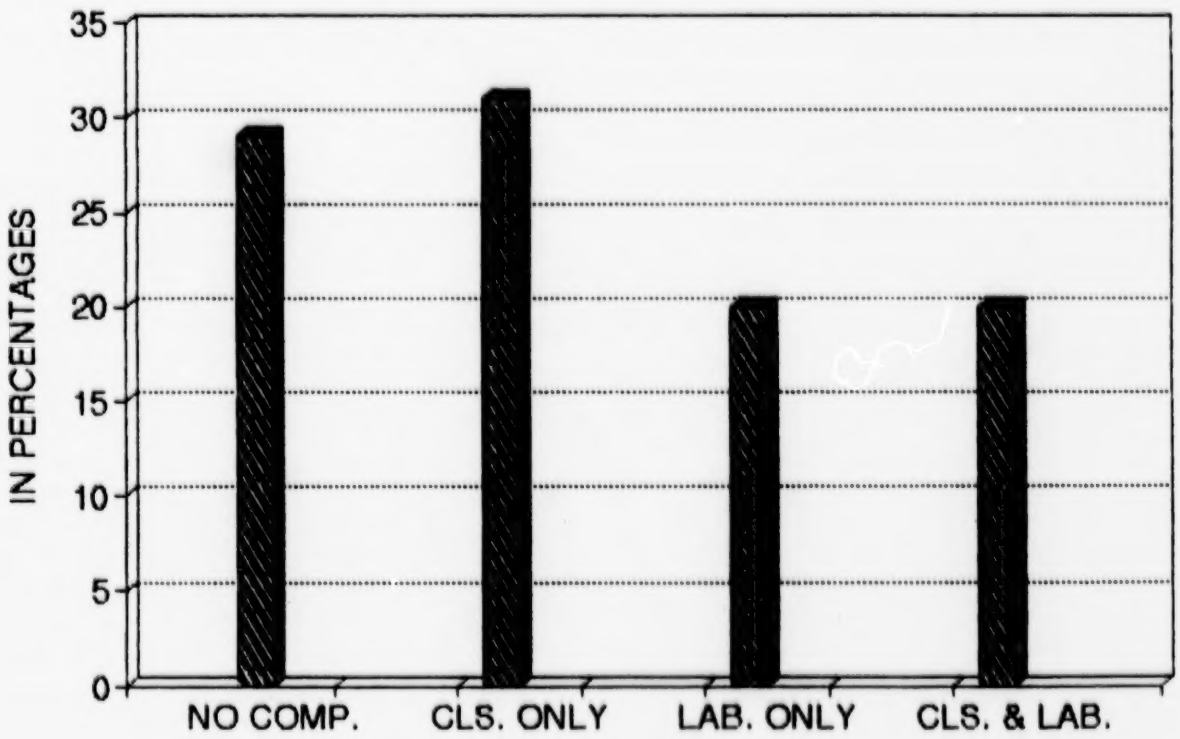

FIGURE 10: QUESTIONNAIRE ON THE USE OF COMPUTERS IN EARLY CHILDHOOD EDUCATION

TEACHER'S NAME_____GRADE_____

NAME OF SCHOOL_____Public/Private___

NUMBER OF YEARS TEACHING EXPERIENCE_____

NUMBER OF YEARS OF EDUCATION_____HIGHEST DEGREE_____

I. USE OF COMPUTERS IN THE CLASSROOM

1.	Do you think it is necessary to introduce the computer to children in early childhood education?	YES	NO
2.	Are you currently using a computer in your classroom?	YES	NO
3.	Would you like to use a computer in your classroom?	YES	NO
4.	What type of computer are you using?		
5.	Do your children use a computer in a school computer lab?	YES	NO
6.	Do you have computer curriculum guidelines for your use in planning computer instruction in your classroom?	YES	NO
7.	Do you own a home computer?	YES	NO
8.	What type of computer do you have?		
9.	Estimate the percentage of your students who have computers in their homes?		

10.	What skills do you think can be taught with the use of the computer for early childhood students?		
11.	What software are you currently using with the computer?		
12.	What software do the children like the best?		
13.	Are you involved in choosing software for computer use in your classroom?	YES	NO
14.	Have you had any training in the use of the computer?	YES	NO
15.	Where did you get your training? 1. On Own 2. Workshop 3. University classes 4. School inservice 5. School Computer Instructor		
16.	If you have not had formal training, how did you learn to use the computer?		

17. How much experience have you had in the use of the computer?

a. None _____

b. I've read some_____

c. I know how to load and use some programs_____

d. I've taken a/some computer classes _____

e. I use a computer frequently _____

f. These statements don't reflect my experience_____

18. Do you feel you need more training in the use of the computer?	YES	NO

19. If yes, what skills or knowledge do you need to know, and what type of training do you think would be useful for you?

II. ATTITUDE TOWARDS COMPUTERS

STATEMENT	strongly agree	agree	no opinion	disagree	strongly disagree
1. I would like to learn to use the computer.					
2. I would encourage colleagues to use the computer.					
3. I can think of five things I would use the computer for.					
4. A computer could help me with a lot of things.					
5. If I could afford it, I would buy a computer.					
6. Being able to use the computer will be important for my life.					
7. The computer lets you make mistakes without making you feel bad.					
8. The computer makes learning fun.					
9. Everyone will have to know how to use a computer.					
10. All children should have access to a computer if they so choose.					

FIGURE 11 Score Sheet for Cory(1983) Computer Levels

HARDWARE(Questionnaire numbers fitting this category)

2 Classroom Computer Yes No 5 Lab Y N

7 teacher home c y n 9 student home c %

SOFTWARE

6 comp guide y n 11 & 12 software none basic Mecc wide variety

13 choose software y n

TRAINING

7 home comp y n 14 training y n

15 type of training 1 2 3 4 5 16 how learned computer

17 level of experience 1 2 3 4 5

TEACHERS' PERSONAL ATTITUDES TOWARD COMPUTERS

Statement	Strongly Agree		No	Disagree	Strongly
1 I would like to learn to use the computer	1	2	3	4	5
2 I would encourage colleagues to use computer	1	2	3	4	5
4 Using the computer will be important in life	1	2	3	4	5
5 A computer can help me in many ways	1	2	3	4	5
8 I can think of 5 ways a computer could help me	1	2	3	4	5
9 If I could afford it, I would buy a computer	1	2	3	4	5

TEACHERS' PROFESSIONAL ATTITUDES TOWARD COMPUTERS

10 all children should have access to a computer	1	2	3	4	5
6 everyone will need to know how to use a computer	1	2	3	4	5
7 a computer makes learning fun	1	2	3	4	5
3 a computer lets you make mistakes w o feel bad	1	2	3	4	5

1 Computers should be introduced in ECED classes yes n